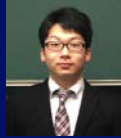


Laser-produced multiply charged ion plasma sources for a compact water window soft x-ray microscope

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Abstract

Imaging in the water window soft x-ray (SXR) spectral region ($\lambda=2.3\text{--}4.4$ nm) that benefits from the natural contrast between carbon and oxygen absorption is of great interest for the investigation of unstained biological samples. In this study, we focus on the multiply charged ion plasma sources for the use in a table-top microscope with a single-shot flash imaging capability.

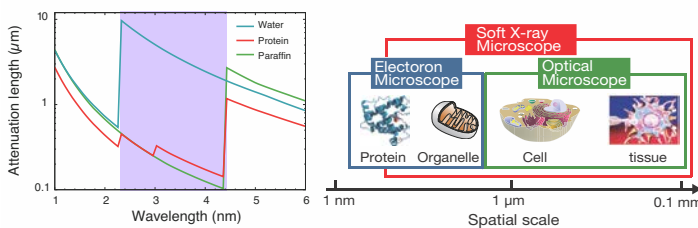
Summary

We have investigated performance of multiply charged ion plasma sources in the water window spectral region.

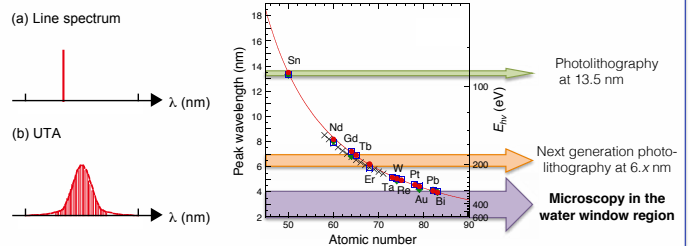
- (1) Evaluation of the spectral structures from Au to Bi.
- (2) Development of a SXR contact microscope within table-top scale.
- (3) Demonstration of single-shot flash image of micro-mesh.

Background: toward single-shot imaging within table-top systems

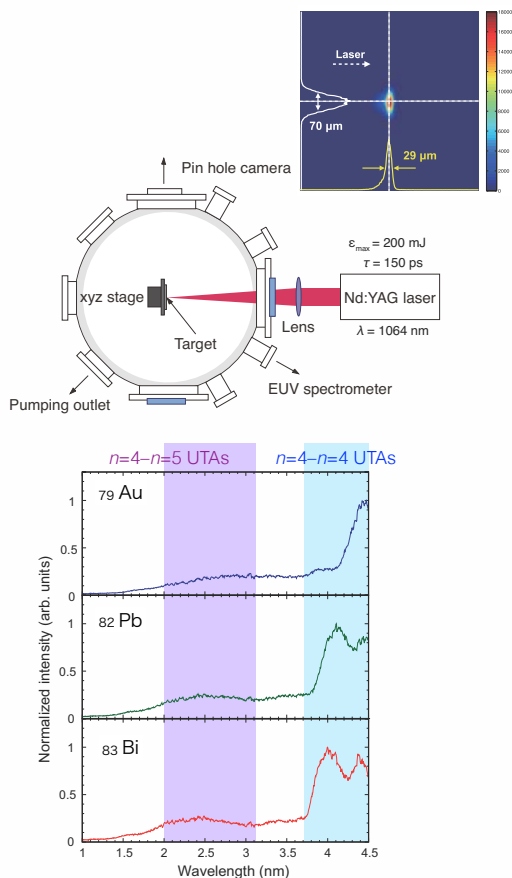
Microscopy in the water window spectral region



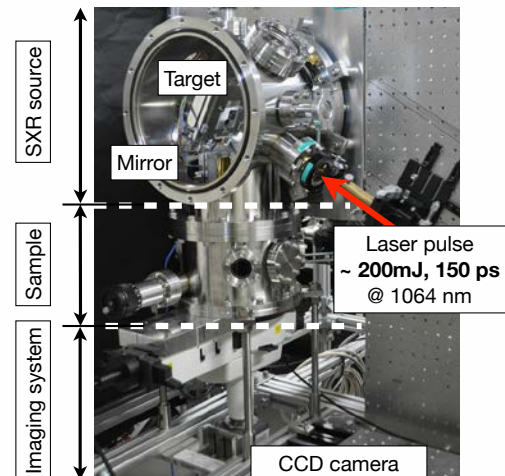
Scheme for high-power source: Unresolved Transition Array (UTA)



Feature of the sources



Compact soft X-ray microscope system



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